## LISTING OF THE CLAIMS

1. (Currently Amended) A photoconversion device comprising:

a substrate having a surface;

a ~~first~~ doped region ~~doped to a first conductivity type located below the~~ in said substrate and at said surface ~~of the substrate~~ thereof, said doped region being of a first conductivity type and having a graded profile, wherein said doped region has a higher dopant concentration near the surface of the substrate; and

~~a second region doped to a second conductivity type located beneath said first doped region for collecting photogenerated charges~~ a charge accumulation region in said substrate and substantially below said doped region, said charge accumulation region being of a second conductivity type.

2. (Original) The photoconversion device of claim 1, wherein said first conductivity type is p-type.

3. (Original) The photoconversion device of claim 1, wherein said second conductivity type is n-type.

4. (Currently Amended) The photoconversion device of claim 1, wherein said ~~graded profile further~~ doped region comprises a first sub-region doped to a first dopant concentration and a second sub-region doped to a second dopant concentration.

5. (Currently Amended) The photoconversion device of claim 4, further comprising a third sub-region ~~laterally~~ adjacent to said first and second doped sub-regions ~~having~~, wherein said third sub-region has no dopant ~~ions~~ from said first and

second doped sub-regions and separates said first and second doped regions from said charge accumulation region.

6. (Currently Amended) The photoconversion device of claim 4, wherein said first dopant concentration is a p+ dopant concentration ~~and said second dopant concentration is less than a p+ dopant concentration~~.

7. (Original) The photoconversion device of claim 4, wherein said first dopant concentration is from about 2.0 x $10^{12}/cm^2$ to about 1.0 x $10^{14}/cm^2$.

8. (Original) The photoconversion device of claim 7, wherein said first dopant concentration is from about 6.0 x $10^{12}/cm^2$ to about 5.0 x $10^{13}/cm^2$.

9. (Original) The photoconversion device of claim 4, wherein said second dopant concentration is from about 1.0 x $10^{12}/cm^2$ to about 6.0 x $10^{13}/cm^2$.

10. (Original) The photoconversion device of claim 9, wherein said second dopant concentration is from about 3.0 x $10^{12}/cm^2$ to about 4.0 x $10^{13}/cm^2$.

11. (Currently Amended) The photoconversion device of claim 6, wherein ~~said p+ doped first sub-region primarily sets the~~ a pinning voltage ~~of~~ for said photoconversion device is substantially set by said first sub-region.

12. (Original) The photoconversion device of claim 4, wherein said graded profile is established by said first dopant concentration ~~is~~ being greater than said second dopant concentration.

13. (Currently Amended) The photoconversion device of claim [[4]] 5, wherein said ~~first doped sub-region is formed with an angled implantation having an~~

~~angle from about 2 to about 30 degrees~~ third sub-region separates said doped region from a transistor gate.

14. (Currently Amended) The photoconversion device of claim 13, wherein said first doped sub-region is ~~formed with an angled implantation having an angle from about 2 to about 15 degrees~~ spaced farther from said transistor gate than said second doped sub-region.

15. (Cancelled).

16. (Cancelled).

17. (Currently Amended) The photoconversion device of claim 4, wherein said first and second doped sub-regions ~~are implanted with~~ comprise $BF_2$ or ~~$B^{11}$ dopant~~ Indium ions.

18. (Currently Amended) The photoconversion device of claim [[17]], wherein said ~~dopant ions are implanted with an implant energy of from about 1 keV to about 40 keV~~ doped region and said charge accumulation region are part of a photodiode.

19. (Cancelled).

20. (Currently Amended) The photoconversion device of claim 4, wherein said second doped sub-region has a shallower doping profile with respect to said substrate surface than said first doped sub-region.

21. (Cancelled).

22. (Original) The photoconversion device of claim 1, wherein said photoconversion device is part of a CMOS imager.

23. (Original) The photoconversion device of claim 22, wherein said CMOS imager is a 3T, 4T, 5T, 6T, or 7T device.

24. (Original) The photoconversion device of claim 1, wherein said photoconversion device is part of a CCD imager.

25. (Currently Amended) The photoconversion device of claim 1, wherein said ~~second conductivity is provided from the group comprising of~~ charge accumulation region comprises arsenic, antimony, or phosphorus ions.

26-29. (Cancelled).

30. (Currently Amended) A photoconversion device comprising:

a substrate having a surface and a substrate dopant concentration;

a first region of said substrate, said first region being doped to a first conductivity type and at least partially located ~~below~~ at the surface of the substrate;

a second ~~undoped~~ region ~~laterally~~ of said substrate, said second region being adjacent to said first ~~doped~~ region, said second region having a dopant concentration substantially the same as said substrate dopant concentration; and

a third region of said substrate, said third region being doped to a second conductivity type, located substantially beneath said first ~~doped~~ region with respect to said substrate surface, separated from said first region by said second region, and being configured to collect ~~for collecting~~ photogenerated charge[[s]].

31. (Original) The photoconversion device of claim 30, wherein said first conductivity type is p-type.

32. (Original) The photoconversion device of claim 30, wherein said second conductivity type is n-type.

33. (Previously Presented) The photoconversion device of claim 30, wherein said first doped region has a first dopant concentration.

34. (Currently Amended) The photoconversion device of claim 30, wherein said second region ~~does not have~~ has a dopant concentration of said first conductivity type no greater than a dopant concentration of non-active portions of said substrate.

35. (Currently Amended) The photoconversion device of claim [[34]] 33, wherein said first dopant concentration is a p+ dopant concentration.

36. (Original) The photoconversion device of claim 35, wherein said first dopant concentration is from about $2.0 \times 10^{12}/cm^2$ to about $1.0 \times 10^{14}/cm^2$.

37. (Original) The photoconversion device of claim 36, wherein said first dopant concentration is from about $6.0 \times 10^{12}/cm^2$ to about $5.0 \times 10^{13}/cm^2$.

38. (Cancelled).

39. (Cancelled).

40. (Currently Amended) The photoconversion device of claim 30, wherein said first doped region ~~is implanted with~~ comprises $BF_2$ or ~~$B^{11}$ dopant~~ Indium ions.

41. (Cancelled).

42. (Cancelled).

43. (Original) The photoconversion device of claim 30, wherein said photoconversion device is part of a CMOS imager.

44. (Original) The photoconversion device of claim 43, wherein said CMOS imager is a 3T, 4T, 5T, 6T, or 7T device.

45. (Original) The photoconversion device of claim 30, wherein said photoconversion device is part of a CCD imager.

46. (Currently Amended) The photoconversion device of claim 30, wherein said ~~second conductivity is provided from the group comprising of~~ third region of said substrate comprises arsenic, antimony, or phosphorus ions.

47. (Currently Amended) The photoconversion device of claim 30, wherein said second region of said substrate separates said first region from a neck of said third ~~doped~~ region ~~is formed with an angled implantation having an angle from about 0 to about 30 degrees~~.

48. (Currently Amended) The photoconversion device of claim 47, wherein said third ~~doped~~ region is ~~formed with an angled implantation having an angle from about 0 to about 15 degrees~~ in contact with a transistor gate at the surface of said substrate at said neck.

49. (Currently Amended) The photoconversion device of claim [[30]] 48, wherein said ~~third doped region is formed with an implant energy of from about 30 keV to about 300 keV~~ second region of said substrate separates said first region from said transistor gate.

50. (Currently Amended) The photoconversion device of claim 49, wherein said ~~third doped region is formed with an implant energy of from about 50 keV to about 200 keV~~ first region has a higher concentration of dopant ions of said first conductivity type nearer the surface of said substrate relative to portions of said first region farther from said surface of said substrate.

51-234. (Cancelled).

235. (Currently Amended) A photoconversion device comprising:

a substrate having a surface and a substrate dopant concentration;

a first region of said substrate doped to a first conductivity type and located at and below the surface of the substrate, said region having a dopant gradient profile wherein said dopant is in higher concentrations nearer said surface of said substrate relative to portions of said first region deeper within said substrate;

~~a separation region; and~~

a second region of said substrate doped to a second conductivity type and located substantially beneath said first doped region relative to said surface, ~~and separation region~~ said second region being configured with said first region for generating charge from light exposure and collecting photogenerated charges; and

a third region of said substrate, said third region having a dopant concentration substantially the same as said substrate dopant concentration and separating said first and second regions from each other.

236-240. (Cancelled).